

GAO

United States General Accounting Office

Report to the Secretary of Defense

October 1997

# ACQUISITION REFORM

## Effect On Weapon System Funding



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National Security and  
International Affairs Division

B-272651

October 29, 1997

The Honorable William Cohen  
The Secretary of Defense

Dear Mr. Secretary:

Over the last several years, the Department of Defense (DOD) has placed priority attention on reforming its acquisition processes and has emphasized that savings resulting from acquisition reforms are needed to help fund weapons modernization. Responding to a request by the Under Secretary of Defense for Acquisition and Technology, the military services estimated acquisition reform cost reductions on 63 major weapon programs. We have reviewed the services' estimates to determine the extent to which the reported cost reductions from acquisition reform will provide funds from approved budgets to support modernization.

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## Background

In March 1996, the Under Secretary of Defense for Acquisition and Technology directed DOD service acquisition executives and the Director, Defense Logistics Agency, to provide consistent data supporting their acquisition reform cost reduction estimates. According to DOD, the services generally used the 1995 President's budget as the baseline for estimating cost reductions because it reflected the financial and program content of weapon programs in mid-1994, before DOD's current acquisition reform efforts were implemented. The services compared the 1995 President's budget to the 1997 President's budget to estimate cost reductions from acquisition reform. They also estimated the cost reductions relating to current acquisition reform initiatives beyond fiscal year 2002.

As we discussed in our recent high-risk report<sup>1</sup> on defense weapon systems acquisition, the ultimate effectiveness of DOD's current initiatives to reduce the cost and improve the outcomes of its acquisition processes cannot yet be fully assessed because they are in various stages of implementation. DOD is pursuing a number of positive initiatives that could, over time, improve the effectiveness of its acquisition processes. However, it may take several years of continued implementation before tangible results can be documented and sustained.

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<sup>1</sup>High-Risk Series: Defense Weapon Systems Acquisition (GAO/HR-97-6, Feb. 1997).

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## Results in Brief

While we continue to support DOD's effort to reform its acquisition processes, our review raises concerns about the extent to which cost reductions from acquisition reform that the services have reported will be available to fund DOD's modernization program in the near term.

Of the \$29 billion in estimated cost reductions reported by the services, our analysis shows that only \$7.2 billion, or 25 percent of the reductions, are expected to occur between 1995-2002 from an approved budget. Most of the remaining \$21.8 billion reported by the services are reductions that either occurred before 1995 or are anticipated to occur beyond fiscal year 2002. A significant portion of the \$7.2 billion had been used to meet needs within the program generating the reduction.

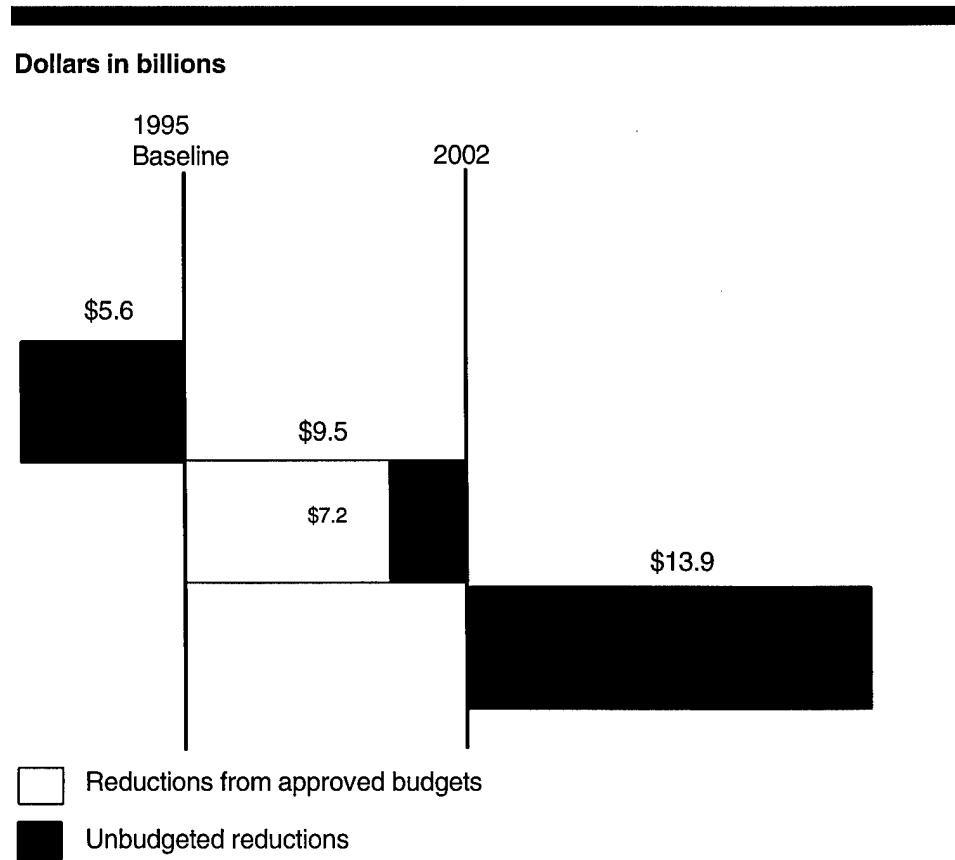
Our review also indicates that acquisition reform cost reductions may be offset by cost increases elsewhere in the programs. Our analysis of 33 of the 63 programs reporting acquisition reform cost reductions shows that after taking into account these reductions and after adjusting for inflation and quantities of systems being bought, total acquisition costs for these programs increased an average of 2 percent. This suggests that the estimated cost reductions from acquisition reform are being offset by cost increases elsewhere in the programs or reinvested within the programs. Consequently, few funds will be available for other DOD acquisition programs. We excluded classified programs and others that could not be fairly compared to the baseline from our analysis.

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## One Quarter of DOD's Estimated Cost Reductions Reflect Reductions From Approved Budgets

The services estimated that acquisition reform reduced the cost of acquiring major weapon systems by about \$29 billion. However, our review indicated that only about one quarter of that amount (\$7.2 billion) represents reductions from approved budgets and is expected to occur between fiscal year 1995 and 2002. About \$5.6 billion represents unbudgeted cost reductions based on actions occurring in years before the baseline 1995 President's budget and about \$13.9 billion is expected to occur after fiscal year 2002—the last year covered by the President's 1997 budget. The remaining \$2.3 billion of the \$9.5 billion in cost reductions of the services' estimates occurring between fiscal year 1995 and 2002 were unbudgeted cost reductions. (See fig. 1.)

**Figure 1: DOD's Estimated Cost Reductions From Acquisition Reform**



DOD reported cost reductions from acquisition reform for 63 of its major weapon programs. Ten of these programs account for about 65 percent of the estimated \$29-billion reduction in the cost of developing and procuring these programs. One program, the Air Force's C-17 program, accounts for \$5.4 billion, or about 19 percent of the \$29 billion. In February 1997, we reported that C-17 program costs had only decreased by \$174 million.<sup>2</sup> Although the C-17 program production costs decreased, these savings were offset by increases for research and development, aircraft modifications, military construction, and field support. Figure 2 shows DOD's estimated cost reductions due to acquisition reform for the 10 programs claiming the largest reductions. (See app. I for a description of

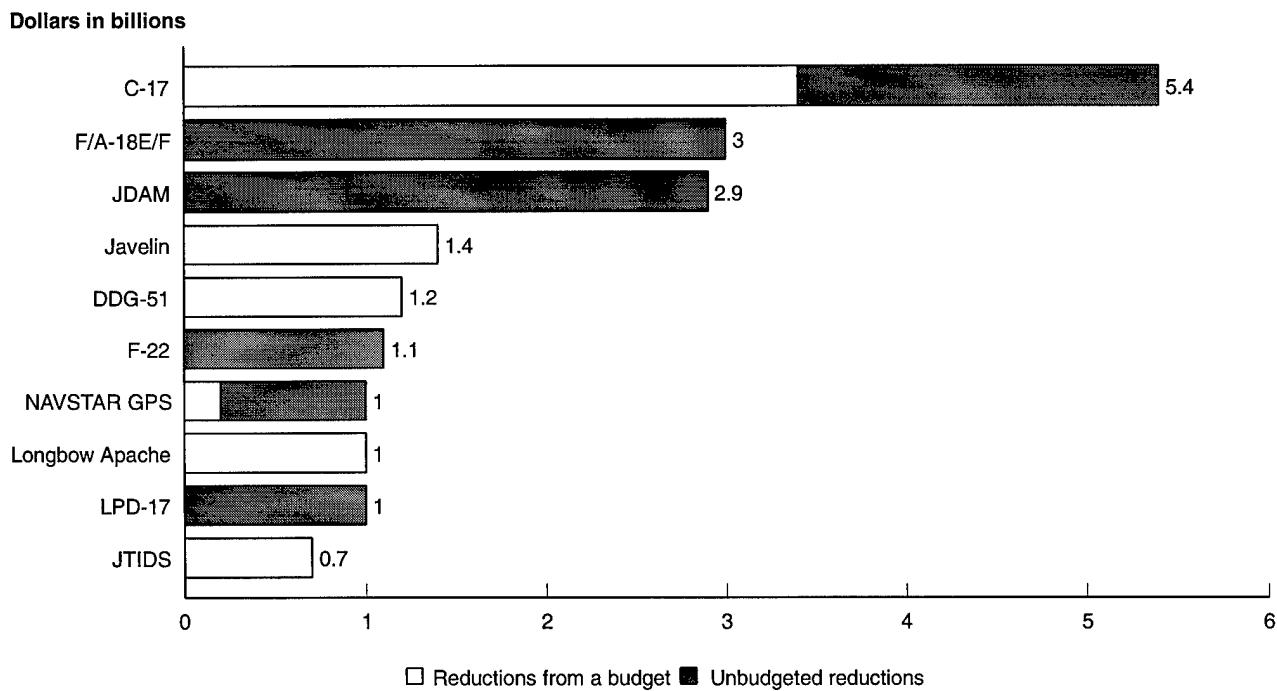
<sup>2</sup>Military Airlift: Options Exist for Meeting Requirements While Acquiring Fewer C-17s (GAO/NSIAD-97-38, Feb. 19, 1997).

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each of these 10 weapon programs and the types of acquisition reform initiatives DOD says it is implementing to achieve the cost reductions.)

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**Figure 2: Weapon Programs Claiming the Largest Acquisition Reform Cost Reductions**



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Among the services, the Air Force is claiming the largest amount of total acquisition reform cost reductions, estimated at \$14.9 billion, or 51.6 percent. The Navy follows with about \$8.9 billion (30.6 percent), and the Army with about \$5.2 billion (17.8 percent).

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## Estimated Cost of Major Weapon Programs Increased Despite Acquisition Reform

Using estimates contained in the December 1993 and December 1995 Selected Acquisition Reports (SAR), we analyzed the costs for 33 of 63 weapon programs reporting acquisition cost reductions to determine the effect of acquisition reform on program cost estimates. The 33 programs account for about \$17.7 billion of the \$29 billion in acquisition reform cost reductions reported by the services (see app. III). Our analysis shows that the cost of the programs increased, on average, by about 2 percent, after adjusting for quantity changes and inflation. Among the services, the Army showed a 0.5-percent decrease, the Navy an increase of 1.4 percent, and the Air Force showed an increase of 3.2 percent.

Twenty-three of the 33 programs experienced an average cost increase of 3.1 percent, with the increase ranging from 0.5 to 66 percent. Cost increases for these programs ranged from \$19.9 million to \$2.2 billion and averaged about \$478 million (fiscal year 1997 dollars). These increases suggest that acquisition reform cost reductions for these programs have been offset by cost increases or by reinvestments within the programs. Ten of the programs we analyzed experienced cost decreases ranging from 0.3 to 19 percent, with an average cost decrease of 4 percent. The cost reductions for these programs ranged from \$15.3 million to \$716.1 million with an average decrease of \$293.4 million (fiscal year 1997 dollars).

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD generally concurred with the comments and views presented in the report and stated that DOD shares our concern about the extent to which acquisition reform cost reductions would be available to fund modernization. DOD's comments are presented in their entirety in appendix IV.

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## Scope and Methodology

We analyzed the services' estimates of cost reductions attributed to acquisition reform for development and procurement of their major weapon programs.<sup>3</sup> To determine if acquisition reform initiatives

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<sup>3</sup>For the purposes of this report, we define cost reductions as reductions to the costs of developing and procuring weapon systems. We exclude reductions claimed in operations and maintenance (O&M) costs since most programs did not report O&M cost reductions. Of the total of about \$16 billion in O&M cost reductions that was reported, about \$14 billion was claimed by the LPD-17 program, which estimated that the reductions would occur after fiscal year 2002.

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generated additional funds for modernization, we compared the cost estimates of 33 of the 63 programs reporting acquisition reform cost reductions to determine whether the costs had increased or decreased. Initially, we included all major weapon systems that reported acquisition reform cost reductions. However, we then eliminated 30 programs that (1) had classified cost information, (2) did not have a SAR that we could use as a baseline, (3) experienced a significant program restructuring, and/or (4) did not report production costs for the system.

Our methodology was adapted from one previously used by our office and the Rand Corporation to evaluate the effect of acquisition reform on weapon system costs.<sup>4</sup> For the 33 programs selected for analysis, we used current program estimates from the December 1993 SAR as a baseline and compared them to the current estimate of the December 1995 SAR. These two periods were selected because they coincided with the time periods DOD used to estimate cost reductions from acquisition reform. The programs were adjusted for quantity changes and the effects of inflation because such changes are often caused by forces outside the program. We normalized the quantity differences between the 1993 and 1995 SARS by adjusting the total costs reported in the December 1995 SAR to reflect the 1993 SAR baseline quantity. To normalize the quantity, we subtracted the cost changes attributed to variances in program quantities. This is one of three common techniques used to normalize quantity.<sup>5</sup>

To determine any cost differences between the December 1993 and 1995 SAR, we calculated the cost variance for each system by comparing the adjusted current estimate of the December 1995 SAR total program cost to the current estimate of the December 1993 SAR. All of the calculations were performed using base year dollars. In some cases, the base year dollar from the December 1993 SAR differed from the December 1995 SAR. In those cases, we used the same inflator the program used to inflate the December 1993 SAR information. If the SAR did not contain information on the inflation factor that was used, we used the DOD deflators published by the Office of the Under Secretary of Defense (Comptroller).

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<sup>4</sup>Acquisition: DOD's Defense Acquisition Improvement Program: A Status Report (GAO/NSIAD-86-148, July 23, 1986) and Edmund Dews and Giles K. Smith, Acquisition Policy Effectiveness: Department of Defense Experience in the 1970s, Rand Corp. (R2516-DR&E, Oct. 1979).

<sup>5</sup>Paul G. Hough, Pitfalls in Calculating Cost Growth from Selected Acquisition Reports Rand (N-3136-AF, 1992).

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The results using this methodology have three important limitations:

- First, the results of our analysis cannot be exclusively linked to the acquisition reform initiatives because of the effect of other factors such as prior improvement programs, program stretch-outs, and other unknown factors.
- Second, the acquisition reform initiatives have only been in use for a few years. The full cost impact of acquisition reform will likely not be known for several years until programs developed and produced under the new acquisition process are delivered.
- Third, the effect of reinvesting the cost reductions in programs cannot be separated from other program cost changes.

The National Defense Authorization Act for Fiscal Year 1997 required DOD to conduct a Quadrennial Defense Review. As part of the review, DOD assessed a wide range of issues, including the defense strategy of the United States and the force structure required to support that strategy. As a result, DOD may reduce the quantities being bought of some weapon programs. Our analysis does not take into account the effect of any restructuring resulting from the Quadrennial Defense Review.

We reviewed reports from the Congressional Research Service and DOD, as well as our own prior reports. We also interviewed Office of the Secretary of Defense, Navy, Army, and Air Force officials responsible for developing and implementing acquisition reform.

This review was conducted in accordance with generally accepted government auditing standards.

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We are sending copies of this report to appropriate congressional committees; the Secretaries of the Army, the Navy, and the Air Force; and the Director of the Office of Management and Budget. Copies will be made available to others upon request.

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If you or your staff have any questions concerning this report, please contact me on (202) 512-4841. Major contributors to this report were Charles W. Thompson, Assistant Director; Jose A. Ramos, Evaluator-in-Charge; and Mary Offerdahl, Senior Evaluator.

Sincerely yours,

A handwritten signature in black ink, appearing to read "David E. Cooper".

David E. Cooper  
Associate Director  
Defense Acquisitions Issues



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### Abbreviations

DOD	Department of Defense
GPS	Global Positioning System
JTIDS	Joint Tactical Information Distribution System
JDAM	Joint Direct Attack Munition
O&M	operations and maintenance
SAR	Selected Acquisition Reports

# Weapon Programs Claiming the Largest Acquisition Reform Cost Reductions

## C-17 Globemaster III

The C-17 is a wide body, air refuelable, four engine, turbofan aircraft that is the replacement for the C-141 transport, and it will complement the larger, but less maneuverable, C-5 aircraft. The Air Force's C-17 program estimated cost reductions of about \$5.4 billion due to acquisition reform cost reductions. This amount was arrived at by adding the \$2.7 billion in savings resulting from a Should Cost review, \$1.7 billion in savings projected from accelerating the production schedule, and \$1 billion in savings due to using a multiyear procurement strategy.<sup>1</sup> The Air Force attributed these reductions to the use of acquisition streamlining, best practices, and cost reduction initiatives. Specifically, according to the Air Force, it used integrated product teams and reduced specifications, standards, and contract data requirements. Also, the team identified reductions in direct labor, overhead, and work to offload from the prime contractor to suppliers.

In February 1997, we reported that despite the cost reduction initiatives taken by the government and the contractor, the total estimated program cost for the C-17 had only decreased by about \$174 million from the \$43 billion January 1994 Air Force cost estimate.<sup>2</sup> C-17 production cost savings were offset by increased cost estimates for research and development, aircraft modifications, military construction, and field support. The contract prices for the last 50 aircraft could increase by an additional \$1 billion because of the ceiling prices contained in the multiyear production contract.

## F/A-18 E/F Naval Strike Fighter

The Navy's F/A-18 E/F program follows prior unsuccessful attempts to modernize the Navy's tactical aviation fleet. The program originated from the 1988 Hornet 2000 study conducted by the Naval Air Systems Command and McDonnell Douglas Aerospace Corporation and was approved as a major modification program in 1992. This aircraft is a high-performance twin-engine, multimission aircraft that provides flight escort, interdiction, fleet air defense, close-air support, and tactical reconnaissance. According to the Navy, the estimated total program cost will be \$89.2 billion, \$5.8 billion in development costs and \$83.4 billion in procurement costs for 1,000 aircraft.<sup>3</sup>

<sup>1</sup>In 1994, the Air Force performed a should cost review to promote economies and efficiencies that would make the C-17 program more affordable. This review covered the remaining 88 aircraft buy.

<sup>2</sup>For additional information on the C-17 program, see Military Airlift: Options Exist for Meeting Requirements While Acquiring Fewer C-17s (GAO/NSIAD-97-38, Feb. 19, 1997).

<sup>3</sup>For additional information on the F/A-18 E/F program, see Navy Aviation: F/A-18E/F Will Provide Marginal Operational Improvement At High Cost (GAO/NSIAD-96-98, June 18, 1996).

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According to the Navy, the program avoided about \$3 billion in costs prior to fiscal year 1995. It attributes these cost avoidances to innovations and changes in the relationship with the contractors that led to a design that could affordably meet operational mission and inventory requirements. A multidisciplinary government-industry integrated product team was used throughout the engineering and manufacturing design process. Concurrent design and manufacturing implementation efforts, according to the Navy, eliminated serial work and multiple design iterations. In addition, investment in high speed machining, laser alignment tools, and use of modern tooling techniques contributed to achieving the affordability goal, according to the Navy.

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## **Joint Direct Attack Munition**

The Joint Direct Attack Munition program (JDAM) is a joint Air Force and Navy program to provide current fighter and bomber aircraft the capability to accurately and precisely attack fixed, or relocatable, land and maritime targets under adverse weather conditions from medium and high altitudes. JDAM is a tail guidance kit, consisting of an inertial navigation system aided by the Global Positioning System (GPS), that is used to upgrade existing general purpose bombs. Through controlled tail fin movements, the kit directs the bomb to the target.<sup>4</sup>

The Air Force estimates that the JDAM program cost reductions will be about \$3 billion. Research, development, test, and evaluation cost savings accounted for \$49.8 million of the \$78.1 million reported as cost reductions from an approved budget. These cost reductions were attributed to efficient use of wind tunnel testing, which resulted in reducing or eliminating some tests, reduced the cost of test instrumentation, and streamlined the B-1/JDAM test program. The Air Force attributed the remainder (\$28.3 million) to reducing the unit costs from \$42,000 to \$14,000. The balance of the cost reduction is comprised of a \$2.9-billion cost avoidance, which the Air Force attributes to the reduction in the unit price of the system. The Under Secretary of Defense (Acquisition and Technology) designated JDAM as one of the Defense Acquisition Pilot Programs.<sup>5</sup>

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<sup>4</sup>For additional information, see [Joint Direct Attack Munition: Low-Rate Initial Production Decision](#) (GAO/NSIAD-97-116R, Mar. 17, 1997).

<sup>5</sup>Defense Acquisition Pilot Programs are given regulatory and statutory relief to explore new approaches to doing business.

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## Javelin Advanced Antitank Weapon System-Medium

The Javelin program is a joint Army and Marine Corps program expected to increase the infantry's lethality against advanced armor threats. Javelin is a man portable, fire-and-forget, antitank weapon system that is composed of two major components—a command launch unit and a round, which is a missile sealed in a disposable launcher container. For operation of the system, the round is mated with the launch unit, but the launch unit may also be used in a stand-alone mode for battlefield surveillance and target detection. The Army expects Javelin to defeat armored targets out to distances of 2,000 meters, during the day or night and in adverse weather.<sup>6</sup>

The Army estimates that Javelin cost reductions will be about \$1.4 billion. According to the Army, cost reduction efforts, accelerated procurement, multiyear contracting, and a productivity improvement program will result in these savings. The procurement savings were used to accelerate production and finance producibility and operation and support cost reduction initiatives, and a portion was returned.

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## DDG-51 Guided Missile Destroyer

The DDG-51 is a multimission guided missile destroyer that can operate independently or as a unit of Carrier Battle Groups and Surface Action Groups, in support of Underway Replenishment Groups and Marine Amphibious Task Forces. These ships operate in multithreat environments that include air, surface, and subsurface threats. Further, the DDG-51 can respond to low intensity conflict/coastal and littoral offshore warfare in addition to open ocean conflict providing or augmenting power projection and forward presence requirements. The ship features an all steel hull and deckhouse and a gas turbine engine propulsion system.

The DDG-51 program estimates that it will save over \$1.2 billion in program costs. Part of the savings was attributed to an affordability initiative started by the program manager who voluntarily offered to reduce the program's budget by \$30 million per ship, beginning with the Flight IIA ships in fiscal year 1994. The program office maintains a database to track the initiatives and estimates that the program will achieve about \$20 million of the \$30 million. According to program officials, the savings were achievable due to adherence to acquisition reform principles.

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<sup>6</sup>For additional information on this program, see Army Acquisition: Javelin Is Not Ready for Multiyear Procurement (GAO/NSIAD-96-199, Sept. 26, 1996).

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## **F-22 Advanced Tactical Fighter**

The F-22, the Air Force's next-generation air superiority fighter, is expected to be a low-observable, highly maneuverable aircraft and is to be used to penetrate enemy airspace and achieve a first-look, first-kill capability by using air-to-air weapons against enemy aircraft. The F-22 is characterized by its low observable highly maneuverable airframe, a new engine capable of supersonic cruise without having to use an afterburner, and advanced integrated avionics.

According to the Air Force, the F-22 achieved cost savings of \$5 million by reducing contract data requirements and staffing. In addition, the F-22 achieved a cost avoidance of \$1.1 billion by employing lean logistics, according to the Air Force. These savings may be offset by the recommendations of the F-22 Joint Cost Estimating Team, which recommended extending the engineering and manufacturing development phase to reduce program risk. As a result, an additional \$2.2 billion will be required, which, the Air Force says, will be funded by eliminating \$706 million budgeted for preproduction verification aircraft and infusion of \$1,453 million, which is funded by extending the production ramp up and decreasing the number of aircraft procured during production ramp up. In addition, the Joint Cost Estimating Team expects to contain the \$13.1 billion in production cost growth through the use of multiyear contracts, producibility enhancements, business and human resource consolidations, outsourcing, and aggressive material management. Our review of the Air Force's F-22 restructuring plan found that the projected costs are optimistic.<sup>7</sup> The Air Force's planned reductions are greater than those achieved on prior fighter programs.

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## **NAVSTAR GPS**

NAVSTAR GPS is a space-based radio positioning, navigation, and time distribution system. GPS provides precise, continuous, all-weather, common-grid positioning, velocity, navigation, and time reference capability to multiple users worldwide. The GPS Block IIF program is expected to develop, produce, verify, and field and support space and ground systems to sustain GPS in the next century. The Air Force anticipates procuring 33 Block IIF satellites.

The Air Force estimates that GPS cost reductions exceeded \$1 billion. According to the Air Force, the GPS Block IIF program saved \$181 million by implementing acquisition reform and competing the satellite buy. In addition, the program reduced the number of military specifications and

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<sup>7</sup>For additional information, see *Tactical Aircraft: Restructuring of the Air Force F-22 Fighter Program* (GAO/NSIAD-97-156, June 4, 1997).

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military standards from 100 to 2 and reduced the number of contract data requirements from 300 to 3. Further savings were achieved by using a multiyear procurement to purchase the Block IIF satellites, as well as the use of commercial off-the-shelf hardware and software for the satellite production and the control system development. In addition, the program estimated an additional \$821 million in unbudgeted cost reductions that were attributed to the same efforts used to achieve the savings reductions.

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## Longbow Apache

This program reported cost reductions of \$1 billion. All helicopters in the Apache fleet are to be modernized with new avionics and be capable of firing both the laser-guided Hellfire missile and a radar-aided Longbow Hellfire “fire-and-forget” missile. These improvements are designed to, among other things, allow the Apache to conduct precision attacks in adverse weather, automatically engage multiple targets, and operate on the digital battlefield of the future. Additionally, 227 of the 758 upgraded Apaches will be equipped with a new mast-mounted, millimeter-wave fire control radar and more powerful engines. The Longbow Apache weapon system is composed of three components—a modernized Apache helicopter, a fire control radar, and a Longbow Hellfire missile.

The Army plans to upgrade 227 of its AH-64A Apache attack helicopters into a new version known as the AH-64D Longbow Apache. The \$1 billion cost reduction is attributed to continuous use of a multiyear procurement strategy and increasing the yearly quantities to an economic order quantity of 72 aircraft per year. Additionally, the Longbow Apache has incorporated a number of acquisition reform initiatives, according to the Army. For example, in the request for proposals, the Army said performance specifications replaced 18 military specifications, military standards were reduced from 29 to 1, and the statement of work was reduced from 113 to 25 pages. Further, the contract data requirements were reduced from 117 to 14, and the DOD Cost/Schedule Control System Criteria were replaced with the contractors’ management systems. These cost savings for aircraft procurement, according to the Army, were applied within the program to increase the procurement quantities in the first multiyear contract and the outyear savings were given back to the service.

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## LPD-17 Amphibious Transport Dock Ship

The Navy estimates that the LPD-17 program, a functional replacement for the LPD-4, LSD-36, LKA-113, and LST-1179 classes of amphibious ships used for embarking, transporting, and landing elements of the Marine landing force, will avoid \$1 billion in procurement costs. According to the

Navy, acquisition reform reduced costs due to a reduction of specifications, equipment, and the application of advanced computerized modeling and simulation. Procurement cost avoidances of \$1 billion were achieved, according to the Navy, by eliminating the need for a dual-source arrangement for the program. The Navy expects to improve the ship's quality and reduce ownership costs by selecting higher quality systems and components during ship design and construction. Also, they expect to avoid costs by using more commercial design and construction methods and the use of commercial off-the-shelf equipment.

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## **Joint Tactical Information Distribution System**

The Joint Tactical Information Distribution System (JTIDS) is a family of terminals to provide improved combat capability in fighter aircraft, command and control centers, and surface air defense units by providing real-time, netted, jam-resistant, secure data, and voice communications. JTIDS is a joint service program with the Air Force as the lead service.

The Air Force estimates that JTIDS cost reductions exceeded \$745 million. According to the Air Force, the JTIDS program office incorporated various acquisition reform initiatives that contributed to reducing the cost of the terminals. The Air Force estimated a \$143-million cost reduction in terminal production costs from acquisition reform initiatives such as eliminating contract data and testing requirements. In addition, Multifunction Information Distribution System terminal costs were reduced by \$486 million by implementing the cost savings initiatives developed by the Air Force's Affordability Manufacturing Technology Demonstration program.

# Department of Defense Estimates of Acquisition Reform Cost Reductions by Program

Dollars in millions

	Acquisition reform cost reduction	Total cost from 12/93 SAR	Total cost from 12/95 SAR
<b>Air Force programs</b>			
Advanced Medium Range Air-to-Air Missile	\$701.0	\$12,917.2	\$11,388.0
E-3 Airborne Warning and Control System Radar	211.7	893.4	903.4
B-1 Conventional Mission Upgrade Program	8.2	No SAR	1,089.1
B-2 Advanced Technology Bomber	60.0	No SAR	No SAR
C-130J	300.5	No SAR	No SAR
C-17A Globemaster III	5,366.0	21,368.1	41,750.6
Cheyenne Mountain Update/Cheyenne Mountain Complex C/I/TWAA	15.0	1,652.0	1,761.4
Common Missile Warning System	207.7	See Army	See Army
Defense Meteorological Satellite Program/NPOESS	0.0	2,042.2	2,343.4
F-22 Air Superiority Fighter Program	1,129.7	71,590.9	70,093.1
NAVSTAR GPS	1,002.0	11,538.1	16,840.1
JDAM	2,960.3	681.5	2,470.6
Joint Primary Aircraft Training System	300.0	302.8	3,663.8
Joint Service Imagery Processing System	18.9	666.6	646.2
Joint Surveillance Target Attack Radar System	42.7	9,043.9	9,351.6
JTIDS	745.5	2,005.3	2,089.8
MILSTAR	578.6	Classified	Classified
Space Based Infrared System	644.0	No SAR	2,576.8
Titan IV Expendable Launch Vehicle	661.8	37,708.5	23,562.2
<b>Army programs</b>			
Advanced Field Artillery Tactical Data System	0.1	949.7	1,161.6
Advance Threat Infrared Countermeasures/Common Missile Warning System	27.2	No SAR	3,378.2
Abrams Upgrade	744.0	6,397.8	6,694.2
Longbow Apache	1,001.5	8,211.8	8,275.2
Brilliant Anti-Armor Submunitions	50.2	3,254.0	3,042.1
Blackhawk UH-60L	133.2	9,970.2	4,778.6
Bradley Fighting Vehicle System Upgrade	296.6	4,185.3	4,125.9
Chemical Demilitarization	6.6	No SAR	13,612.6
Crusader	29.0	No SAR	2,641.1
Family of Medium Tactical Vehicles	0.1	15,875.3	16,376.0

(continued)

**Appendix II**  
**Department of Defense Estimates of**  
**Acquisition Reform Cost Reductions by**  
**Program**

Dollars in millions

	<b>Acquisition reform cost reduction</b>	<b>Total cost from 12/93 SAR</b>	<b>Total cost from 12/95 SAR</b>
Joint Surveillance Target Attack Radar System Ground Service Module	\$15.8	\$1,585.7	\$1,387.1
Javelin	1,425.5	5,096.6	3,826.2
Longbow Hellfire	0.0	3,498.1	2,606.9
Multiple Launch Rocket System	12.5	6,281.5	6,802.8
Palletized Load System	8.6	1,042.2	1,237.2
Patriot (PAC-3, DOD)	158.0	1,772.0	5,899.3
Sense and Destroy Armor (SADARM )	12.9	4,785.0	2,703.6
Single Channel Ground and Airborne Radio System	264.6	4,366.3	3,806.2
Secure Mobile Anti-Jam Reliable Tactical Terminal	540.0	944.8	978.5
Army Tactical Missile System	340.4	2,590.5	4,409.1
Theater High Altitude Air Defense	101.5	4,819.0	4,947.2
<b>Navy programs</b>			
Sidewinder AIM-9X	134.4	No SAR	682.3
AN/SQQ-89 Surface Ship Undersea Warfare Combat System	48.0	3,820.0	3,996.1
AV-8B Remanufacture	21.8	No SAR	2,318.3
Cooperative Engagement Capability	367.8	No SAR	2,587.8
DDG-51 Destroyer	1,195.0	56,799.9	57,095.2
E-2C Hawkeye Carrier Based Airborne Early Warning Command and Control System	590.6	No SAR	3,331.1
EHF SATCOM	47.1	2,334.0	2,150.2
F/A-18C/D	24.0	38,921.3	0.0
F/A-18E/F	3,000.0	89,128.1	80,958.7
Joint Standoff Weapon System	143.0	2,878.0	10,564.9
LHD-1	55.0	8,514.4	7,907.9
LPD-17 Amphibious Transport Dock Ship	1,000.0	59.1	72.9
Multifunction Information Distribution System-Low-Volume Terminal	12.0	1,092.1	1,129.9
New Attack Submarine Program	555.3	No SAR	64,891.4
Standard Missile-2 Block I, II, III, A, B	1.0	8,263.8	8,759.5
Standard Missile-2 IV	0.3	4,915.5	864.7
SSN-21 Seawolf- AN/BSY-2	62.8	12,908.2	13,124.3
Naval Undergraduate Jet Flight Training System (T-45TS)	41.8	5,980.9	5,417.0
Tomahawk	566.2	12,649.8	13,847.1
Trident II Missile	190.0	25,513.5	27,702.5

(continued)

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**Appendix II**  
**Department of Defense Estimates of**  
**Acquisition Reform Cost Reductions by**  
**Program**

Dollars in millions

	<b>Acquisition reform cost reduction</b>	<b>Total cost from 12/93 SAR</b>	<b>Total cost from 12/95 SAR</b>
UHF Follow-on Communication Satellite	\$185.0	\$1,720.5	\$1,868.5
V-22	639.9	6,636.4	46,599.7

# List of Weapon Systems We Reviewed

Dollars in millions

Service	Program	Base year	12/95 SAR	12/93 SAR	Program cost Increase or (decrease)	Percent of program cost Increase or (decrease)
			Program cost normalized for quantity changes			
Army	Advanced Field Artillery Tactical Data System	1996	\$1,133.6	\$919.9	\$213.7	23
	Brilliant Anti-Armor Submunitions	1991	2,508.0	2,578.1	(70.1)	(3)
	Blackhawk UH-60L Utility Helicopter	1971	1,858.7	1,917.5	(58.8)	(3)
	Bradley Fighting Vehicle System Upgrade	1994	3,455.4	3,065.6	389.8	13
	Joint Surveillance Target Attack Radar System Ground Service Module	1989	1,064.4	1,272.9	(208.5)	(16)
	Javelin Advanced Anti-Tank Weapon System-Medium	1990	3,382.6	3,728.8	(346.2)	(9)
	Longbow Apache	1996	7,366.6	7,010.6	356.0	5
	Longbow Hellfire Missile System	1996	2,402.9	2,968.0	(565.0)	(19)
	Multiple Launch Rocket System	1978	3,118.3	3,052.8	65.5	2
	Palletized Load System	1993	896.3	997.6	(101.3)	(10)
Navy	Sense and Destroy Armor	1989	1,502.9	906.7	596.2	66
	Single-Channel Ground and Airborne Radio System	1984	2,597.5	3,090.6	(493.1)	(16)
	Secure Mobile Anti-Jam Reliable Tactical Terminal	1992	811.0	754.3	56.7	8
	Average Cost Increase or (Decrease)					(0.5)
	AN/SQQ-89 Surface Ship Antisubmarine Warfare System	1985	3,418.9	3,429.8	(10.9)	(<1)
	DDG-51 Guided Missile Destroyer	1987	41,948.2	41,023.5	924.7	2
	F/A-18 E/F Naval Strike Fighter	1990	54,687.6	53,858.8	828.8	2
	LHD-1 Amphibious Assault Ship	1982	6,042.2	6,288.8	(246.6)	(4)
	Navy EHF SATCOM Program	1990	1,891.7	1,875.0	16.7	1
	SSN-21/AN/BSY-2 Attack Submarine-Combat System	1990	12,201.2	12,039.9	161.3	1
	Standard Missile-2 Block IV Surface-to-Air Missile	1984	2,565.4	2,619.3	(53.9)	(2)
	Standard Missile-2 Block I, II, III A, B Surface-to-Air Missile	1984	7,061.6	6,975.0	86.6	1
	Trident II Sea Launched Ballistic Missile	1983	19,776.8	19,563.5	213.3	1

(continued)

**Appendix III**  
**List of Weapon Systems We Reviewed**

Dollars in millions

Service	Program	Base year	12/95 SAR	12/93 SAR	Program cost Increase or (decrease)	Percent of program cost Increase or (decrease)
			Program cost normalized for quantity changes			
<b>Air Force</b>	Ultra High Frequency Follow-on Communications Satellite	1988	\$1,558.7	\$1,433.6	\$125.1	9
	Average Cost Increase or (Decrease)					1.4
	Advanced Medium Range Air-to-Air Missile	1992	12,003.3	11,923.4	79.9	1
	E-3 Airborne Warning and Control System Radar	1989	730.3	696.2	34.1	5
	C-17A Globemaster III	1996	23,174.6	23,053.6	121.0	1
	Cheyenne Mountain Update	1989	1,665.0	1,570.8	94.2	6
	Defense Meteorological Satellite Program	1975	875.2	778.9	96.3	12
	F-22 Advanced Tactical Fighter	1990	50,885.9	49,074.3	1,811.6	4
	Joint Surveillance Target Attack Radar System	1983	6,119.2	5,813.4	305.8	5
	NAVSTAR Global Positioning System Satellite	1979	3,364.1	2,593.7	770.4	30
	NAVSTAR Global Positioning System User Equipment	1979	3,133.0	3,089.3	43.7	1
	Titan IV Space Booster	1985	23,653.3	23,160.5	492.8	2
	Average Cost Increase or (Decrease)					3.2

# Comments From the Department of Defense



OFFICE OF THE UNDER SECRETARY OF DEFENSE

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03 OCT 1997

Mr. Louis J. Rodrigues  
Director, Defense Acquisition Issues  
National Security and International  
Affairs Division  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Rodrigues:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "ACQUISITION REFORM: Effect on Weapon System Funding," dated August 4, 1997 (GAO Code 707155/OSD Case 1428). The Department generally concurs in the comments and views expressed in the GAO draft report.

We share the GAO concerns about the extent to which acquisition reform cost reductions will be available to fund the DoD modernization program in the near term. The diminished economic base, significant variations in missions, and continually evolving technical capabilities, require the Department to consider a variety of factors in determining what actions to pursue as the modernization process proceeds. We are actively pursuing actions that will reflect cost effectiveness in all actions relating to the modernization of DOD weapon systems.

Thank you for the opportunity to review and comment on the report. Technical corrections to the report were separately provided. The professionalism and the level of cooperation between my staff and yours was greatly appreciated and we look forward to working with your staff again in the future.

Sincerely,

*Donna S. Richbourg*

Donna S. Richbourg  
Acting Deputy Under Secretary of  
Defense (Acquisition Reform)



The following are GAO's comments on the Department of Defense's letter dated October 3, 1997.

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**GAO Comments**

1. DOD's technical comments were considered and changes were made where appropriate.